was contiguous to the room, and communicated with a drain beneath the floor of my patient's apartment."

Coming nearer the metropolis, a committee has been organised at Brompton: the parish has been divided into sections, and a careful examination as to the state of drainage, &c., is going on. The condition of some of the courts in this otherwise healthy and beautiful district is deplorable.——Mr. Charles Bernard has published a "Chart of the Public Health Act,"* which will be useful in Board-rooms, &c. ——Dr. Robert Dickson has printed three pages of useful "Admonitions on Asiatic Cholera"——and Mr. Challice, surgeon, has published one page (through Renshaw, Strand), shewing "How to avoid the Cholera," from which we take two sentences, which relate to our speciality:—"1. Cleanse out, and thoroughly scour, your water-butts or cisterns: boil the water before you drink it or give it to your children. Impure water is the cause of many diseases. 2. If there be offensive smells in your house, from sewers or cesspools, complain to your landlord; if he take no steps for removing the nuisance, complain to the parish authorities; if they don't assist you, apply to the magistrates. The *law* now protects from *poison*, as well as starvation."——On the subject of impurities in water we find the following note in the "Report and Supplement on the Supply of Surplus Water to Manchester," &c., by S. C. Homersham, C.E.†:—"Any scheme for supplying a town population with water from surface drainage, especially when the constant supply is to be introduced, ought to provide for filtering the water. All river water, especially in warm summer weather, contains more or less organic matter in combination, which may in great part be separated from it by filtration. There is much more difficulty in filtering river water that is quite clear in hot summer weather (owing to the vegetable matter contained in it), than in filtering turbid water in cold weather. In the appendix to the illustrations of the Croton Aqueduct, published by Wiley and Putnam, New York, 1843, and written by Charles A. Lee, M.D., it is stated, p. 136, 'River water always contains a more or less quantity of organic matter in suspension, or solution. As a general rule, the quantity is too small to produce any decidedly injurious effect; but physicians and medical writers agree in the opinion that water impregnated with it to any great extent must be deleterious. Where the decomposing matter is too small to produce any immediately obvious effects, it is difficult to procure any decisive evidence of its influence on the system. When the amount is considerable, it causes *dysentery* and *fevers*, often of a highly fatal character." The health of a whole community may be affected by the impurities in the water drunk by them. When choosing a site for a house, parties should learn the nature of the strata through which the water passes, and how it is likely to affect their constitution. By the way, some of our water-companies want talking to.

* Chapman and Hall, Strand.

† Weale, London; Thomson, Manchester.

ON THE NATURE AND PROPERTIES OF THE METALS USED IN THE BUILDING TRADES.

INTRODUCTORY.

Before proceeding to give something like a useful compendium of what is known of the nature and properties of the different metals of more or less importance in the building trades, it may be worth while, even for form's sake, to take a brief view of their electrical relationships, which materially affect their utility and properties under various circumstances.

Let us, as a free and easy simile, suppose a common bar magnet to be divided into, or to be composed of, different compartments, the more intermediate or central of which are of clear metal, while the more polar are *both corroded*, and their metalline lustre quite obscured by agencies of different, and let us suppose of contrary, descriptions; and although most of even the metals-proper exist in nature usually in a state of corrosion, we have a rough similitude of what the whole range or scale of metalline nature, metalloidal as well as purely metallic, by comparison, appears to us to present to view. The metals-proper occupy the middle regions or compartments of the scale, while each *pole* or extreme is more permanently corroded, the metalloidal or *positive* extreme, comprising the bases of the earths and alkalies, by oxygen; and, as we incline to think, the other or *negative* extreme, comprising the arsenical, sulphurous, and other "non-metallic" bases forming acids, by hydrogen. That the positive metalline pole is covered with the great electro-negative oxygen Davy demonstrated, though it can be proved that the ancient chemists were well aware of its metalline nature. What the negative pole is covered with remains to be seen; and certainly it is not to be expected that *it* will yield up its secrets to the *same* persuasive agency which so effectually revealed the secret of its *positive* associate. We already know, however, that sulphur does contain hydrogen, and that hydrogen is capable of producing appearances somewhat like that of boron and silicon. But our purpose was a merely popular one in touching on this rather curious and interesting subject, and we have effected the object designed in merely suggesting the similitude, and pointing out the position relatively held by the metals-proper between the two extremes of the metalline scale comprising antimony, arsenic, tellurium, and even iodine, towards the negative pole; and zinc, manganese, calcium, potassium, &c., towards the positive.

The more important metalline and other elements have been thus electrically classified in order from the positive towards the negative pole or extreme,—potassium, calcium, aluminum, manganese, zinc, iron, tin, lead, copper, mercury, silver, gold, platinum, antimony, arsenic, tellurium, iodine, sulphur. This classification may be afterwards found useful. A somewhat different, yet in the main similar, order has been observed by Dr. Faraday in the magnetical relationships of the metals, the rank or position of the magnetical being analagous to that of the electro-positives, while the diamagnetical are analogous to the electro-negatives. It must be noted, however, that there is here analogy more than identity. But into this novel and erudite subject we need not enter.

The science of the metals-proper, such as iron, lead, and copper, at this present time, is in rather a peculiar crisis of its progress. Hitherto they have been regarded more as uncompounded, as well as indecomposible, elements than as compounds admitting of at least a description of their elements, if not of an analysis. One of our best living chemists, however, Dr. Graham, has ventured, apparently on good grounds, to elaborate a theory of their actual *composition*. Holding them to be of a compound, saline (or rather haloidal) nature, he accounts for their individual differences by regarding them as containing more or less powerful 'hasyles,' of a zincous or positive nature and 'salt-radicals' of a negative nature, such as chlorine, the negative agency in common salt. And the metalline natures thus constituted by more or less complication, may be further compounded one with another and still constitute apparently simple metals. Copper, he conceives, contains a more powerful salt-radical, or electro-negative nature, and a less powerful basyle, or electro-positive, than either tin or lead; gold, a still more potent salt-radical and a still weaker basyle than copper, and so on according to the rank of each metal in the electrical scale. Now, it is a singular fact, of which we have been ourselves assured by occasional researches, with curious and startling results, into the ancient history and practice of chemistry, that the ancient chemists, the ridiculed and obnoxious old alchemists, taught nearly the very same doctrine. Nay, they gave instructions for the *formation* and elaboration of the peculiar *salt-radical*, or metal-burning sea-water, as they called it, wherewith they 'amended' metals, or, in fact, strengthened their electro-negative properties, at the expense of their basyles or electro-positive elements. And it was thus they instructed the first preparation or formation of a substance to all appearance identical with one of those which modern chemists still regard as *elements*.

By putrefaction of 'sulphur in prison,' said they, or, in short, of a more or less fixed sulphuret, 'liberate sulphur in companionship with the moist medium, water vive' (living-water! hydrogen!), leaving 'the stony crassitude' in the caput mortuum (as clearly oxygen—of water as 'the simple medium' of putrefaction, fixed in the metallic base of the sulphuret, or in the 'prison,' or 'chest,' as they quaintly called it, of the sulphur). Thus shall you have 'a stinking menstruum' (as clearly sulphuretted hydrogen, or hydrogenized sulphur) of an oily, thick, adhesive nature, which they called 'the glue of the eagle,' and which was plainly, in fact, bisulphuretted hydrogen,—an oily, thick, adhesive, stinking fluid. This 'stinking menstruum' was directed to be carefully cocted till 'the sulphur and the water vive' entered into '*inseparable companionship*' (a possibility of which modern chemists are to this day entirely ignorant), and then the '*red, bloody metal-burning fire-water of clouds* was sweetly prepared, as 'the philosophical *sea-water*,' or 'incombustible fire-water,'—the 'sages burning (metals) with *water*, as the vulgar with fire."

Now, to any one who knows the nature of the metal-burning salt-radicals, and especially bromine, and considers the further incombustibility of hydrogen already fixed, as in water, this forcible and significant, though quaint, phraseology will be understood at once to signify something as near as possible in every respect to bromine, one of the latest and most recondite of modern 'elements,' in the preparation of which, moreover, these ancient fathers of chemistry also betray their intimate knowledge of the existence, the nature, and the most subtle affinities of hydrogen and oxygen, as well as of the composition of water itself. In truth, the extent of the knowledge of the ancient metallurgists and chemists is vastly underrated in modern chemistry, which appears to be only progressing into regions with which our oldest forefathers not only professed to be, but *evidently were*, familiar. To the hosts of impostors, however, by whom the field of ancient chemistry was infested, must be naturally attributed much of that misunderstanding to which the enigmatical form of the ancient writings also not a little contributed.

But the romantic regions of alchemy are certainly not those which we designed to tread under present circumstances, and our encroachment on their borders must be regarded as but a natural and incidental digression in the course of our remarks on the *nature* of the metals in general and in particular.

Moreover, the allusion to the zincous basyle is by no means irrelevant, inasmuch as we mean to begin our remarks on the nature of the individual metals of more or less importance to "the builder," with some account of

Zinc

itself—thus elevated, shall we term it, or debased, by Dr. Graham, into the type of a positive root or basyle to the other and *all more negative* metals-proper.

LEICESTER CEMETERY COMPETITION.

From the Town Council report annexed, it will be seen that the Committee have recommended four plans for the consideration of the Council; another meeting will be held on Wednesday. "*Nec temere nec timide*" seems the favourite.

REPORT.

"The Cemetery Committee have to report that they have received fifty designs for the Leicester Cemetery, in answer to the competition advertisement issued by direction of the Council: and in order to give the Council and the inhabitants interested in the undertaking an opportunity of viewing them (many of which appeared to possess very considerable merit), they engaged the New Hall for this purpose.

The committee have held two meetings on the subject during the last few days, at the first of which they selected fourteen out of the fifty as being those which appeared most suitable for the intended cemetery. They are as follows:—

No.	No.
1. Nec temere nec timide.	13. To mark the spot where earth to earth returns.
2. Maltese cross.	15. Not in vain.
4. Confide recte agens.	16. Labore et honore.
6. Queen's head (Id. stamp).	42. Equal to either fortune.
7. Gold cross on blue shield.	43. More Janus vite.
10. Nisi Dominus frustra.	45. L'Esperance embellit tous—Dumspirospero.
11. A double circle.	
12. Spero succedere.	

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